

Blue ...is a bad sign.

Aurélien Lorcé, Lucien Bodson, Alexandre Ghuysen and Vincent D'Orio.

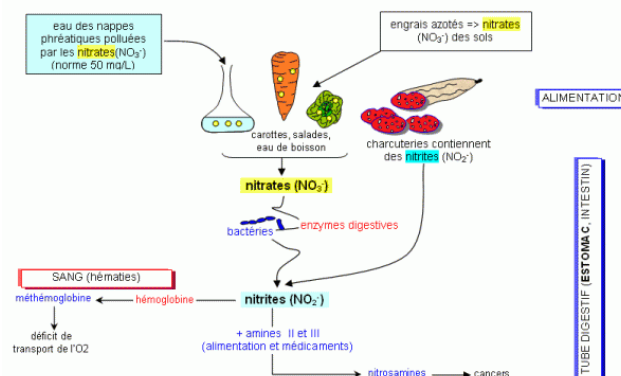
Emergency Department, CHU Sart Tilman Liège, Belgium,

■ Case report:

A 14 months aged boy suddenly developed **deep cyanosis** while visiting his grandfather at hospital. On admission, heart rate was 200/min with a normal blood pressure and no fever. The chest was clear to auscultation with good airflow and no heart murmur. Arterial saturation measured by **pulse oxymetry was 87%** and teguments had a peculiar lavender blue colour that did not respond to standard oxygen therapy. Blood samples for gas analysis were chocolate-brown. Co-oxymetry results revealed a **PaO₂ level of 136 mmHG**, 60% oxyhaemoglobin but presence of **39.2% methemoglobin** and a lactate level of 458 mg/l. **Intravenous methylene blue** therapy at a dose of 2 mg/kg in 30 min resulted in rapid and complete recovery. Further analysis of the potent causes of methaemoglobinemia revealed the use of well water originating from a region surrounded by farms for cooking the boy's dinner that day. Further toxicological analysis indicated a **significant nitrate—"nitrogen (NO₃-N) level measured at 7.14 mg/l in that water**.

■ Discussion:

Acquired methaemoglobinemia usually arises from exposure to haemoglobin-oxidizing agents, such as **nitrites**. Nitrates produce methaemoglobinemia when they are changed into nitrites under the influence of a bacterial proliferation or of a reductase held in plants. **Some vegetables** have high nitrate content but nitrates can also pollute well **water**. Infants are more susceptible than adults because of lower amounts of a key enzyme, NADH-cytochrome b5 reductase, which converts methaemoglobin back to haemoglobin. Lack of gastric acidity may also permit nitrate-reducing organisms to grow in the upper gastrointestinal tract.



■ Conclusion:

Infant presenting with severe cyanosis that is not associated with respiratory distress should be suspected of methaemoglobinemia. Contaminated well water or vegetable with high nitrate levels used to prepare powdered formula or soups may be involved. The present case report reinforces the need for testing of well water for nitrate content before use.